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United States Patent [19]

Lifson

[11] **Patent Number:** 6,047,556[45] **Date of Patent:** Apr. 11, 2000[54] **PULSED FLOW FOR CAPACITY CONTROL**[75] **Inventor:** Alexander Lifson, Manlius, N.Y.[73] **Assignee:** Carrier Corporation, Syracuse, N.Y.

4,854,130 8/1989 Naruse et al. 62/513 X

5,063,750 11/1991 Englund 62/196.3

5,226,472 7/1993 Benevelli et al. 62/217 X

5,634,350 6/1997 De Medio 62/217

5,816,055 10/1998 Ohman 62/196.3 X

[21] **Appl. No.:** 08/986,447[22] **Filed:** Dec. 8, 1997[51] **Int. Cl.⁷** F25B 3/00[52] **U.S. Cl.** 62/196.2; 62/196.4; 62/217;
62/513; 251/129.05[58] **Field of Search** 62/196.2-196.4,
62/217, 513; 251/129.05[56] **References Cited**

U.S. PATENT DOCUMENTS

4,838,037 6/1989 Wood 251/129.05 X

Primary Examiner—Henry Bennett*Assistant Examiner*—Marc Norman[57] **ABSTRACT**

Step control in capacity modulation of a refrigeration or air conditioning circuit is achieved by rapidly cycling a solenoid valve in the suction line, economizer circuit or in a bypass with the percent of "open" time for the valve regulating the rate of flow therethrough. A common port in the compressor is used for economizer flow and for bypass.

3 Claims, 1 Drawing Sheet